

National Aeronautics and Space Administration



goddardview

Volume 7 Issue 1

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New Cellular Antennas Installed on Goddard Water Tower

By Rob Gutro

Goddard's water tower received three new AT&T antennas to improve AT&T cell phone communications on campus. The water tower is located next to Building 16W. The installation took place between November 22 and December 22.

According to Construction Coordinator Dwayne Henderson, the work also included the installation of all ground equipment, as well as tuning and testing to ensure there was no interference with the missions and operations on Center.

The antennas will soon be operational shortly and employees will notice a difference in cell phone reception on campus. ■



Caption: Antennas mounted on the water tower near Building 16W. The black cables connect to the three AT&T antennas.

Photo credit: NASA/Goddard/Debra McCallum

GoddardView

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Cover caption: Security Officer Mike Micciolo checks badges at Goddard's Parkway gate. For more photographs of Goddard, see Page 5.

Photo credit: NASA/Goddard/Michael Weiss

GoddardView Info

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Deadlines: News items for publication in the Goddard View must be received by noon of the 1st and 3rd Thursday of the month. You may submit contributions to the editor via e-mail at john.m.putman@nasa.gov. Ideas for new stories are welcome but will be published as space allows. All submissions are subject to editing.

NASA Goddard Child Development Center Gets an Upgrade for 2011

By Rob Gutro

The New Year rang in an upgraded daycare for children of NASA Goddard employees as construction upgrades are wrapping up this month.

Total renovations of the interior and exterior have been done, and the Child Development Center looks like a different place. Kenneth Williams, Project Manager and Facility Operations Specialist who is overseeing the upgrades, said, "The interior has all new paint and new carpeting. There are also new tiles in the entry way." All of the interior work took only seven days.

The exterior renovations have been extensive and safety has been a central concern that has been worked into the upgrades outside. Those upgrades were being completed in December. There are several areas outside that underwent improvements.

The lower part of the playground area now includes slides, bridges, monkey bars, and a rocket sphere. All of those things are in one piece and were assembled onsite.



Photo credit: NASA/Goddard/Kenneth Williams

Caption: This is the upper play area that consists of a large sandbox with canopy. The dark area surrounding the yellow tarp is rubber mulch. Behind the sandbox is a playhouse. To the right is a bus that rocks side-to-side. The area behind the sandbox is a poured in place rubberized surface (it looks like asphalt), to help reduce injuries. The second play area is in the far back of the photo.

In addition to the sandbox, there are a couple of other things to provide entertainment. There's a playhouse and a small bus called a "spring bus" (a play-sized bus) that children can climb inside and rock from side-to-side. The area between the upper and lower playgrounds may look like asphalt, but it's not. It is yet another innovation to help reduce outside play injuries. It is a poured rubberized surface called "the Vitriturf ETurf System." The pouring was completed on December 10, and, like asphalt, it needs time to cure. Unfortunately, the February-like temperatures that we've been experiencing are slowing the curing process.

Goddard Planner Andrew Casavant of the Facility Maintenance Division (FMD), Code224, designed the improvements and the Goddard FMD helped make it a reality.

Although kids cannot play on the playground until the final safety inspection occurs, Williams noted that it will happen in the near future, and they'll have a brand new, safer play area to enjoy when the weather warms up. ■



Photo credit: NASA/Goddard/Kenneth Williams

Caption: Construction on the lower part of the playground area. That area includes slides, bridges, and monkey bars (one piece).

The upper play area has been transformed into a safe and modern place for children to enjoy the outdoors. There is a large sandbox, 10 feet by 10 feet, and it is covered by a canopy to shield children from summertime sunshine and sunburns. It is surrounded by rubber mulch, the latest in playground technology that doesn't give splinters and doesn't hurt as much when children fall on it. Many of the newest playgrounds around the country are installing rubberized mulch.

A Solar Observation Workhorse Celebrates 15 Years

By Karen C. Fox

On December 2, 1995, the *Solar and Heliospheric Observatory* (SOHO) was launched into space from Cape Canaveral aboard an Atlas IAS rocket. The joint European Space Agency (ESA)/NASA project began its work observing the Sun at a time when the term “solar weather” was almost never used.

Fifteen years later, SOHO has revolutionized what we know about the solar atmosphere and violent solar storms produced by the Sun. SOHO has become an expert comet-hunter, nightly news leader, and a workhorse that helped create the field of near-real-time space weather reporting as we know it—but it started as a tool to answer three scientific questions about the Sun.

“We were looking for answers to three long-standing problems in solar physics,” said Joe Gurman, “the solar neutrino problem, the coronal heating mystery, and the question of what causes solar wind acceleration.” Gurman works at Goddard and has been the U.S. Project Scientist for SOHO since 1998.

Placed into orbit around the L1 Lagrangian point between Earth and the Sun, SOHO was able to observe the Sun continuously without Earth ever obstructing its view. With its uninterrupted observations, says Gurman, SOHO has significantly helped with all three original questions.

First, the so-called solar neutrino problem was a conflict between how many neutrinos were predicted by fusion and models of the solar interior versus how many were in fact detected. SOHO confirmed that the interior models were correct and helped show that, instead, the detectors were not finding all the neutrinos since they were changing after they left the Sun. Second is the coronal heating mystery, so called because the Sun’s outermost atmosphere, or corona, is unexpectedly hundreds of times hotter than the Sun’s surface. SOHO helped determine that the movement of the Sun’s small-scale magnetic fields themselves could contribute, in principle, sufficient energy to heat the corona. Third, SOHO observed that the acceleration of the solar wind appears to be powered by a special kind of waves that can accelerate certain particles preferentially.

SOHO is perhaps best known for its observations of coronal mass ejections, or CMEs. These blasts of gas and magnetic fields are a fundamental concern for those who track and attempt to forecast space weather. But when SOHO launched in 1995, there was disagreement over what a CME headed for Earth looked like. The first ever videos of a CME wave in the lower corona in April of 1997, combined with SOHO’s white light coronagraph observations of the accompanying “halo” CME, changed all that.

Steele Hill, who leads public outreach for SOHO at Goddard, had then only been working for the SOHO team for six months. “It was the first time we had witnessed an event like that. We could track it, predict its direction, and say that in two to three days it will have some impact on Earth.” Hill pulled together some SOHO files and made a movie. It was the first story on the national news that night in April 1997.

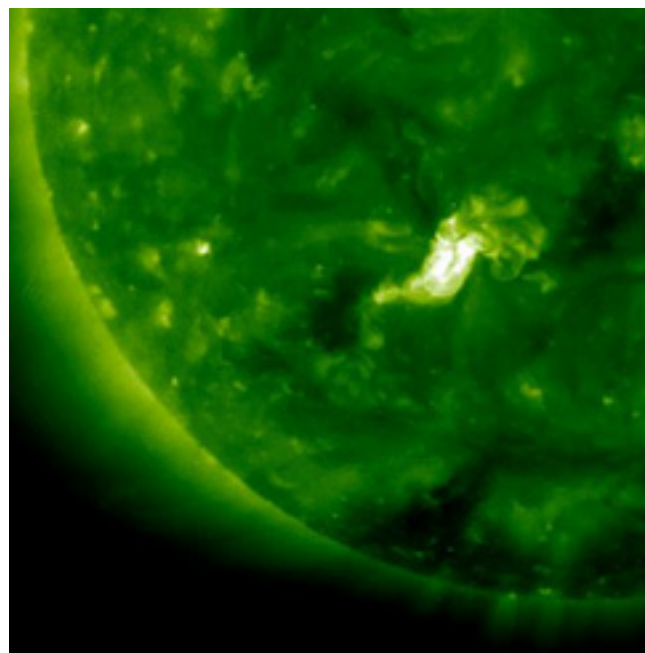


Photo credit: SOHO/ESA/NASA

Caption: One of the first coronal mass ejection-associated waves observed by SOHO EIT occurred on April 7, 1997.

An unexpected destiny for SOHO is that it has become the greatest comet-finder of all time. With its data stream available publicly, anyone can be a comet hunter—and as of December 26, 2010, SOHO had spotted 2,000 of them.

After a good 15 years, SOHO isn’t easing into retirement yet. A long archive of data such as SOHO’s is necessary to spot some of the tiniest waves that propagate through the body of the Sun. Known as buoyancy or gravity-mode waves, these waves only disturb the surface of the Sun at a speed of a millimeter per second.

“That’s a pretty hard measurement to do,” says Gurman. “With 15 years of observations, we just might have a strong enough signal.”

In addition, SOHO is still our only solar observatory to have gathered images of the Sun during a solar maximum. The last maximum was in 2000. As we move into the next peak in 2013, it will be SOHO’s legacy that allows scientists to compare and contrast what we see now in newer missions such as the *Solar Dynamics Observatory* (SDO) and the *Solar TErrestrial RElations Observatory* (STEREO) to what was seen then.

“Every mission stands on the shoulders of the missions that came before it,” says Gurman. “Without the success of SOHO we never would have had the opportunity to get even better measurements with STEREO, *Hinode*, and SDO.”

For more information about SOHO, visit:

<http://sohowww.nascom.nasa.gov/home.html> ■

A Snapping Good Time

By Elizabeth M. Jarrell

During the week of Oct. 23–29, 2010, Goddard employees took photographs celebrating our lives at Goddard as part of “Oh, Snap!” Goddard’s first photographic week in the life group effort. The “Oh, Snap!” Web site received almost 800 photographs from about 60 different photographers.

This event was a unique slice of our lives at Goddard that captured individual moments in time that each photographer deemed significant enough to photograph. People with cameras ranging from “point-and-shoot” to professional level equipment were seen everywhere on campus, snapping away. The images range from security officers to various labs and offices, from specialty labs including the clean room to kids at the daycare center, and from deer and ducks to people working on Center. The uniqueness of the subjects chosen reflects the individual vision of each photographer. Even when several photographers took pictures of the same subject, their unique visions produced strikingly different results. Taken together, these photographs celebrate a slice of our lives at Goddard, from the ordinary to the extraordinary, and from multiple points of view.

“Tweet and Tour,” a companion event to “Oh Snap,” was held on October 27. Approximately fifteen visitors simultaneously toured our campus and “tweeted” photos of their visit to their respective Twitter® accounts. The images were then submitted to the “Oh Snap” Web site.

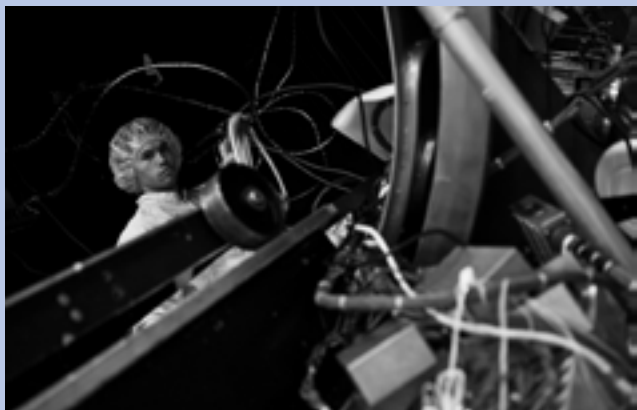


Photo credit: Steve Goldenberg

Caption: An engineer at Goddard. This photo was taken at the “Tweet and Tour” event during the week of “Oh, Snap!”

A “Photo of the Day” was selected from the many submissions and presented for each day of this event. All of the photographs were organized into viewable groups. The images were presented in five different galleries, each with the same general subject matter. There is also one gallery showcasing the entire collection. These galleries are available on Goddard’s flickr® site (<http://www.flickr.com/photos/gsfsc>).

The event underscored Goddard’s commitment to use modern media such as Twitter® and flickr®. Best of all, this snapping good time will result in a photographic time capsule of life at Goddard.

“We were so pleased to see how excited folks were about taking pictures at Goddard,” said Rebecca Roth, the Imaging Coordinator in Goddard’s Public Affairs Office. “You realize what an amazing place this is to work at as you

look at the entire collection. I had a lot of fun getting to meet new people and exploring new places and things going on around Goddard.”

Here, some participants share views about their submissions:

Drive to Goddard before sunrise to get photos of dawn over Building 28, then grab a cup of coffee and check email. Questions researched and answered, then off to stalk and photograph a deer hiding in the woods across from Building 28. I am able to closely approach—I do admit this poor creature is made of concrete, and sadly in need of repair—but isn’t imagination why we work here? —Charles M. Hoisington, Senior Systems Engineer

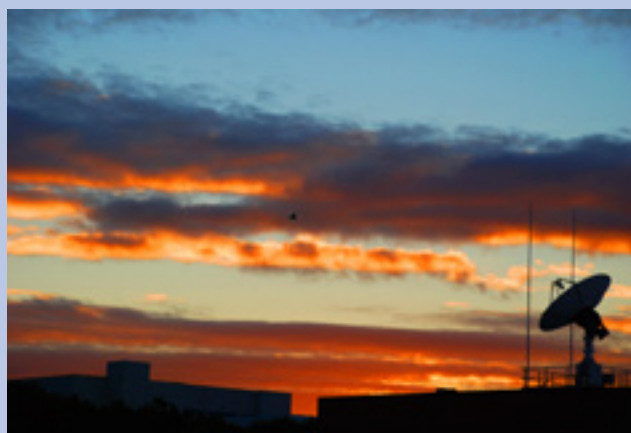


Photo credit: NASA/GSFC/Charles Hoisington

Caption: Dawn over Building 28.

The people I work with are dedicated to mission success and unbelievably talented. From administrative support, to financial support, to technical support, to the managers: I respect them all. It’s a world class TEAM! —Steve Odendahl, Space Science Mission Operations Mission Director

Each group of professionals plays their part so well that the *Hubble* team is truly greater than the sum of its parts. My last photo is of the night sky looking over building 14. I feel the same awe I imagine early astronomers felt as they stared at the heavens looking for answers to eternal questions. My favorite picture: the night time setting and single car remind me that any person that sacrifices a “normal” schedule provides an important service. —David Schaible, Flight Operations Team for *Hubble Space Telescope*

My group’s work isn’t very photogenic. I very much enjoy taking walks around the Goddard campus and finding odd little corners and paths that I didn’t know about. I tried to produce some of my joy of discovery, and my enjoyment of the fall colors, in these photographs. I hope they might inspire others to take a little time to explore. —Kevin W. Parker, software engineer

Goddard has incredible, unique space exploration capabilities and a world class talent pool. The “Oh Snap!” activity gave us an opportunity to explore the hidden treasures of Goddard and capture them for all of us, and the public, to see. —Mike Weiss, Program Manager, Exploration Systems

To view the photos, visit: http://www.flickr.com/photos/nasa_goddard/collections/72157625417155763. ■

NASA and NOAA Team up to Save Teens

By Rob Gutro

It began as an email from a concerned school principal—a plea for assistance to find three lost boys in a boat in the South Pacific—that reached a number of people in NASA and NOAA who tried to provide assistance. It ended with the recovery of the boys 50 days later and all three were in good health.

On Oct. 7, 2010, Goddard Deputy News Chief Rob Gutro received an email from a school principal in the Tokelau Islands about three boys who had taken a small boat out and got lost at sea. The principal, John K., emailed Gutro through the NASA Hurricane page (www.nasa.gov/hurricane), which Gutro manages for the Agency. John said he follows the NASA Hurricane page because it is very effective and timely in notifying residents of the island chain about tropical cyclones.

The Tokelau Islands are a chain of islands in the South Pacific Ocean and a territory of New Zealand that consists of three tropical coral atolls with a combined land area of 10 square kilometers and a population of about 1,400.

Because NASA has a Search and Rescue operations center at Goddard, Gutro forwarded the email to Dave Affens of NASA SARSAT (Search and Rescue Satellite) and John Leslie, NOAA Public Affairs Officer, for assistance.

Affens works in NASA's Search and Rescue Mission Office at Goddard. Most recently, the efforts of the office were recognized when teenager Abby Sutherland visited Goddard to speak with the people that work in the network and helped rescue her at sea.

The National Search and Rescue Plan, updated and signed by participating parties, including NASA in 2007, states that "NASA will support Search and Rescue (SAR) objectives through research and development or application of technology to search, rescue, survival, and recovery systems and equipment, such as location tracking systems, transmitters, receivers, and antennas capable of locating aircraft, ships, spacecraft, or individuals in potential or actual distress."

Meanwhile, John Leslie, Public Affairs Officer for NOAA who works with the NOAA Search and Rescue efforts, sent an email to John K. the same day, and provided some details on who would oversee a rescue.

Leslie learned that the GEOSORT places this island (Tokelau Islands) in Australia's DDR (Data Distribution Region), or their area of responsibility.

Leslie wrote John K. "Hopefully, the children have a 406 MHz beacon to activate. The current NOAA/SARSAT system uses the "store-and-forward" technology coupled with mutual visibility technology. So even if there is not a ground station for the current system nearby, that's okay, because the satellite will transmit the signal to all of the ground stations on the planet as it passes over them in orbit. Those ground stations will relay the message to the Australians."

John K. was unsure, however, if the boys had a beacon in their boat. If they did, no one on the Tokelau Islands knew if the boys would know how to activate it.



Caption: Samuel Perez, Filo Filo, and Edward Nasau before their fateful trip.

Photo credit: Tai Fredricson

Many other efforts and contacts within NOAA were made to assist in the search. Both Agencies provided assistance in notifying regional agencies in the South Pacific and learned the boat had no beacon.

On Nov. 22, John K. again wrote to Gutro informing him that the boys had still not been found. The email said, "Hello Mr. Gutro, Hope this email finds you well. Again, I thank you for response to missing children at sea. It is very unfortunate that we still don't know what has happened to these children. I was just wanting to ask...over the last week winds have changed a lot...very windy...just wanting to know if Tokelau will be expecting any cyclones within Tokelau area any time soon.

Gutro responded and told him that there were no developing tropical cyclones in the region that week.

On Friday, November 26, Gutro received an email from Captain Mark P. Moran of NOAA's Satellite Operations Facility in Suitland, Md. The subject line of the email read "They Found Them!!!! [assistance needed in Tokelau Islands]."

Capt. Moran's email was sent to Chris O'Connors, a Support Officer in NOAA's SARSAT Ops; John Leslie of NOAA Public Affairs; David Benner, Thomas Renkevans, Elizabeth Creamer, Kathy Kelly, and Sam Baker of NOAA; David Affens, Ajay Mehta, Rani Gran, and Gutro at NASA Goddard, all of whom were involved with assisting in the search in some way over the 50-day period.

Moran's email said, "The three boys adrift from the Tokelau Islands for 50 days were found alive and well. Although the boys did not have an emergency beacon, personnel from the USMCC and NASA SAR tried to assist by getting the islanders in touch with the appropriate rescue coordination center.

Continued on Page 11

Building Models, Building Interest in NASA's *James Webb Space Telescope*

Northrop Grumman

When Mr. B's Bricks store owner Ken Brenan came to Northrop Grumman Aerospace Systems in 2007, he was looking for a donation to support a LEGO® education program he was running for 22 different school sites in the Manhattan Beach, Calif. area. When he left, he had an idea for a new educational tool that would pique children's interest in science and engineering and give them a fun way of learning about astronomy via the largest space telescope ever built.

The idea was to create a *Webb Telescope* model out of LEGO® bricks and offer kids a chance to build it at science festivals, schools, and outreach events supported by NASA and Northrop Grumman and its major subcontractors who were helping to build the telescope for Goddard.

But to create a *Webb Telescope* out of LEGO® bricks, Brenan needed to see what the telescope looked like from all sides, information that was not widely available at the time. Fortunately, one of the students in his after-school program offered to help. The student's father was Greg Davidson, who at the time was Northrop Grumman's *Webb* Deputy Program Manager. At the urging of his son, Davidson was able to provide overview drawings with top level measurements, helping Brenan get the specifics he needed to begin putting together a prototype.

His first LEGO® mockup contained about 250 pieces. He assembled the model two or three times to lower the piece count. "We look at two different aspects of a kit: piece count and availability," he explained. "The pieces must be available in LEGO® inventory and we want to keep the piece count as low as possible to minimize cost."

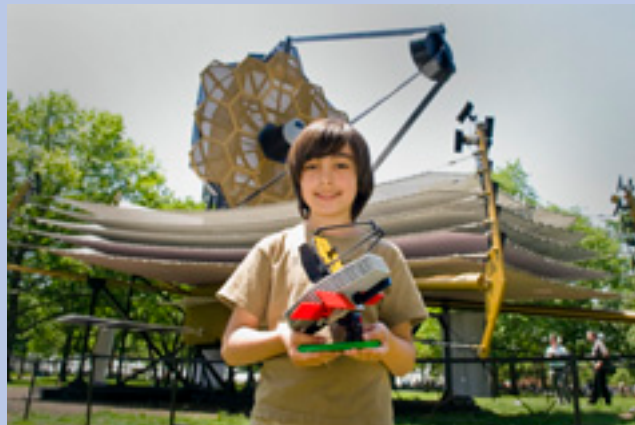
Brenan and the store's four employees spent 50 to 100 man hours creating the model, which measures 8 inches by 6 inches by 8 inches and contains about 150 pieces. Because of his agreement with LEGO®, he is not actually offering branded LEGO® sets. He sells instructions and includes the LEGO® pieces, which he calls a kit.

When his store closed in 2008, he continued to assemble the kits with the help of his family and a few store employees. Over the last three years, Brenan has created 250 kits, which are geared to kids between the ages of six and eight. It can take them from 30 to 60 minutes to build the *Webb Telescope* using LEGO® bricks.

The *Webb Telescope* kits have traveled all over the country, appearing at hundreds of trade shows and events such as the World Science Festival in New York, the USA Science and Engineering Festival on the National Mall in Washington, D.C., the American Institute of Aeronautics and Astronautics Space Education Alley, DETAILS magazine NextFest event in Los Angeles, and at the NASA exhibit during the ESPN X-Games at the Home Depot Center in Carson, Calif.

Recently, the LEGO Group began a partnership with NASA to educate the next generation of scientists. Over the next three years, both The LEGO Group and NASA will participate in a joint outreach and educational program designed to inspire children to explore science, technology, engineering, and math. When the Space Shuttle *Discovery* blasts off from Cape Canaveral for its last scheduled flight, a small LEGO® space shuttle model will accompany the crew.

"We have taken the excitement of NASA's missions and coupled that with kids' love of creating things with the iconic LEGO® bricks," said Leland Melvin, NASA's Associate Administrator for Education. "These projects not only foster creativity but also instill in the young builders a real sense of the engineering and design principles that NASA uses every day. Fun learning activities like these can help inspire kids to become the next generation of explorers."



Caption: A young man proudly displays his JWST model.

Photo credit: Northrop Grumman

For more information about the *James Webb Space Telescope*, visit: <http://www.jwst.nasa.gov>. For more information about the LEGO Group, visit: <http://www.LEGO.com>. For a *Webb Telescope* LEGO® kit, visit: <http://www.jwstinlego.com>. ■

NASA Researcher Profiles Some of the Largest Solar Explosions

By Karen C. Fox

Solar flares, and the related coronal mass ejection, shoot energy, radiation, and magnetic fields out into space that can harm satellites or humans in space. Current observations aren't precise enough to determine whether the eruptions are driven by energy surging through the Sun's surface, or by the sudden release of energy that has slowly accumulated in the atmosphere.

Now, a new way of looking at old data has changed all that, but the results have created more mystery: there isn't enough energy passing through the surface during the eruption to drive the explosion.

"The idea that energy from below triggers the eruption is the easiest explanation," says Peter Schuck, a physicist studying space weather at Goddard. "But if the idea doesn't agree with what's observed, then it's wrong."

Schuck's research indicates that, instead, the trigger occurs in the Sun's atmosphere. "Our result shows that observations are more consistent with a slow accumulation of energy in the atmosphere," Schuck said, "and then a sudden explosion triggered from above, more like lightning."

Schuck studies coronal mass ejections (CME) and solar flares at the place where theory and observation overlap. His latest work on CMEs appeared in the *Astrophysical Journal* in May. Schuck constructed a way to test CME and flare observations in order to limit which group of hypotheses fit the data, even when there's not enough evidence to conclusively pick a single theory.

In the case of CMEs, the data is limited to distant movies captured by spacecraft such as the Solar and Heliospheric Observatory (SOHO). These movies show that CMEs begin as a gigantic arch, some 50 times larger than Earth, with each of its feet planted on the Sun's surface, or "photosphere."

Two camps of theories exist to explain these so-called coronal loops. "The energy is built up by either a twisting motion below the surface or the release of magnetic energy in the solar atmosphere," says Haimin Wang, a physicist at the New Jersey Institute of Technology, whose work focuses on the characteristics of the photosphere before and during solar ejections.

Either way, the energy originally comes from the surface. The question is whether it surges through directly before the appearance of the coronal loop or oozes up slowly over time, storing up in the atmosphere until released in an explosion of light, plasma, magnetic fields, and high energy particles.

Distinguishing between the two options based solely on a distant movie isn't easy. Imagine trying to figure out what powers a car when all you've got to go on is a movie of a highway. Worse, that movie isn't from above, so you might easily determine the direction and speed of those cars, but from head-on or a side view where you're not even sure of the angle.

If you can infer the speed of the car, you could at least figure out how much energy it has and then rule out any power source that didn't fit what you saw.

Schuck has done exactly that. "I developed a way to infer magnetic field motion, and therefore energy amounts, from the velocities we observe in the photosphere," he says.

If these imagined cars were coming directly toward you, you could measure the wavelength of the headlights and by determining how strongly they'd been shifted by the Doppler effect you could measure the car's speed.

Schuck used similar, head-on Doppler measurements to find the velocity of solar material on the surface of the Sun. This material moves perpendicular to the magnetic field at the base of the coronal loop—the crux of what Schuck is trying to understand. He can convert those initial velocities of the Sun's surface into information about the motion and energy of the magnetic field. This analysis gives a precise, accurate range of energy possibilities.

And so, for the first time, one can look at images of the Sun and set firm limits on the maximum energy at a given spot—at least if the material was moving directly towards the camera to provide an accurate measurement.

The next step applies the analysis to an actual coronal mass ejection. Schuck looked at the data from a CME on September 12, 2000. This was an M-class ejection—meaning it was fairly intense, but one step below the strongest X-class—that moved directly towards Earth. Conveniently, this was also a well-studied flare, so other scientists had already examined SOHO images to measure the path, speed, and energy of the CME. This information, in turn, implies how much energy would have come through the photosphere at the start of the process had it indeed initiated from below.

The SOHO images showed the photosphere moving at speeds 10,000 times less slowly than would have been expected if it were directly triggering the eruption. "The velocity you'd need to see on the photosphere would be a thousand kilometers per second," says Schuck. "Not only are these speeds easily detected but they would be greater than the standard measurement range of the instrument. You'd see really weird stuff in the data readouts."

There is always the slim chance that somehow the instruments didn't catch the extreme motion, but given how large the velocities would have had to be, Schuck thinks this is unlikely.

This still leaves a variety of theories on just how the energy is stored and what triggers its release in the atmosphere. Distinguishing between those theories will require more detailed data—something scientists hope NASA's *Solar Dynamics Observatory* (SDO) will be able to provide.

SDO will directly measure the energy in the photosphere at 20 times the resolution of the data Schuck uses currently. Such information will help narrow down what triggers a CME or solar flare even more precisely.

"Now we just need some really big CMEs to work with," says Schuck. ■

Women of SDO: Emilie Drobnes

By Susan Hendrix

Launched on February 11, 2010, NASA's *Solar Dynamics Observatory* (SDO) is already making history transmitting nearly continuous high-resolution images and science data of our nearest star, the Sun.

SDO, the first mission in NASA's Living With a Star program, is designed to understand the causes of solar variability and how space weather results from this unpredictable environment.

Encouraging women to pursue careers in science, technology, engineering, and math is a high priority for NASA. This is the next in a series of interviews with some of the women of SDO as they share their individual journey to becoming part of this exciting mission.

Emilie Drobnes is the Education and Public Outreach (EPO) Lead for the *Solar Dynamics Observatory*. She leads a local and national team in the development, assessment, and dissemination of a variety of programs and products. She led the development and implementation of innovative and award-winning EPO programs and events that actively contribute to the field of education research and evaluation. Drobnes has been involved with the strategic internal and external communication coordination for NASA's Goddard Space Flight Center. She initiated, organized, and was appointed chair of the first Solar Physics Division EPO committee and helped guide the direction of EPO efforts of the American Astronomical Society and American Geophysical Union through the implementation of family science and educator professional development programs.



Photo credit: NASA

Caption: Emilie Drobnes

What first sparked your interest in science or engineering?

I sat on a plane next to someone who worked on the *Solar and Heliospheric Observatory* (SOHO) mission who ended up offering me a job at Goddard. My interest in science and engineering was fueled by my evolving position into NASA Goddard tour guide, Web site editor, and ultimately lead of the SDO education and public outreach program. Until I worked for NASA, I thought science and engineering was too hard for me. After 10 years at NASA, I can say that it's not so hard after all and can in fact be quite fun!

What do you enjoy most about your job?

I love to talk and I love to play, so this is the perfect job for me. Through my partnerships and travel, I get to meet new people all the time and speak with other education specialists, scientists, and space enthusiasts. I also get to play by creating special programs that make science fun for families, teachers, and many others. I love having the flexibility to find new and innovative (even unexpected ways) of sharing our excitement in science.

What advice would you give to students who would like to work on a project such as SDO?

No matter what type of job you want on a project such as SDO, you need math and science. This is true whether you are a scientist, engineer, manager, education specialist, or administrative assistant. They are important no matter what you do. The next important thing is perseverance. Don't ever give up. You have to fight for what you want. Life and work are what YOU make of it. Also don't forget to talk to a lot of people. You never know when the person sitting next to you on a plane could change your life forever!

What do you do on an average day?

Just like every job, there are fun tasks and not so fun tasks. On an average day I answer a lot of emails. A LOT! Then, I write reports to keep everyone aware of everything going on. But once those are all done, the fun begins. I get to give tours of Goddard, run Family Science Nights, travel from conference to conference and see the U.S., and I get to design brochures, posters, stickers, and whole lot more.

What are the greatest challenges of your job?

Teamwork. Teamwork is both amazing and a challenge at the same time. It is great to be able to bounce ideas off people and come up with the best solution as a team. That is how some of the most creative ideas come about. However, a team approach means different personalities, goals, and desires. Sometimes it can be hard to balance it all out and make sure everyone is happy with the outcome. It certainly makes work more interesting!

What is your favorite hobby/activity outside of work?

I love to travel. I have been to Latin America, Asia, and Europe. I love trying new foods and learning new languages to interact with the local folks from the countries I visit. I also enjoy cooking. Some of my favorite moments in life are inviting friends over, cooking a great meal, and sitting around a table for hours talking about everything and anything. ■

i am goddard: Cynthia Simmons

By Christina Coleman

Growing up in a home with a cultural mix that included African-American, German, Chinese, and Native American definitely had its perks. For one, Cynthia Simmons was exposed to a medley of rich cultures and language. But, in her small St. Louis suburb, others weren't so understanding. While the surrounding community couldn't delineate and understand the differences, her mother drilled into her that everyone is human. So, for Simmons, the childhood mantra of "treating people the way you'd want to be treated" didn't stop on the playground.



Caption: Cynthia Simmons.

"It permeates all aspects of my life," said the Deformation, Ecosystem Structure, and Dynamics of Ice (DESDynI) SAFFIRE Instrument Manager (Code 556). And for Simmons, that means she applies that idea socially; in her friendships, at church, and especially at work.

By treating others as you want to be treated, Simmons has contributed to the "i am goddard," campaign by "remembering that everyone is a child of God deserving of dignity and respect" and recognizing that Goddard is a developing inclusive environment to which she can contribute.

"I believe that when I walk into a person's presence they should not feel less of a person after I leave their presence no matter where I go," Simmons said. "It's something my mother stressed to us while growing up because of the diversity in my family's ethnic background as close as my grandparents' generation. In my family, we are the Rainbow Coalition."

For Simmons, Goddard is a great place to foster that attitude.

"What I like most about working at Goddard is the diversity of work that you can get involved in right here all in one place," she said. "But, it would be great if people could see what diversity and tolerance really is and what it truly means. We tend to give it a very narrow definition, but diversity comes in many different packages."

Throughout Simmons' career, she has encountered many challenges and roadblocks that have contributed to her ideology of respect and inclusivity, overcoming them with zeal and integrity. She was in the third class of women to graduate from the Air Force Academy in 1982, but was in only the second class that had African-American women (there were only 3 in the 2 classes of women before her). She was commissioned as a second lieutenant in the Air Force after graduation, and was one of five graduates chosen out of 800+ in her class to pursue a career in the space field. All this after an uncle told her she'd never make it through basic training let alone graduate from the Academy.

She tackled biology and aerospace engineering, and had dreams of working at NASA and becoming an astronaut doing biomedical science in space. However, she viewed her chances of becoming an astronaut to be slim, because at the time, astronauts were chosen from the ranks of test pilots—a very male-dominated field at the time. And after years of being a contractor at companies like Systems Development Corporation, Unisys, Motorola, Swales, and Edge Space Systems, Simmons became a civil servant early last year; a welcome opportunity after 10 years of working on Goddard projects such as Sample Analysis at Mars (MARS), *Space Technology 5* (ST-5), *Geo-stationary Operational Environmental Satellite* (GOES), *Global Precipitation Measurement* (GPM), and the *Lunar Reconnaissance Orbiter* (LRO).

"In my career I've worked about 23 launches for various types of missions. I've had the opportunity to work many different types of missions, and have worked all phases of the project life cycle from proposal to early mission operations," she said.

Speaking on how she contributes to the idea of equal treatment in the workplace currently, Simmons said that her favorite thing is "empowering people to succeed at their job," creating the environment where they can have the confidence, dignity, and respect needed to perform their tasks successfully. "For me, it's always about doing my best, producing the best product I can. One of the biggest things I stress and am known for is my integrity, which is of greatest importance to me in my dealings with others" Simmons said. She also feels differences are important and should be valued, "as they bring new perspectives to the table."

In efforts to foster diversity and inclusiveness, Simmons wants to get involved in the African-American Advisory Committee and is also a member of the Women in Technology group. She mentors young children at camps and focuses on young women who want to get involved in technology, participating in Technology Days at middle schools and high schools.

Photo credit: NASA/Goddard/Pat Izzo

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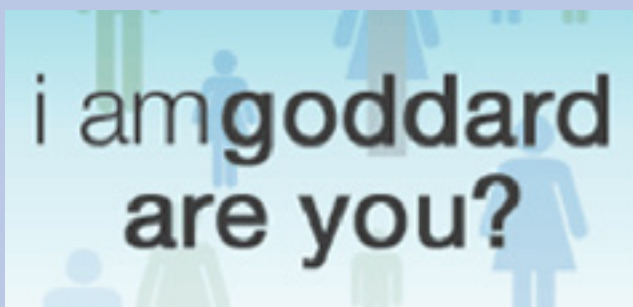
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In her personal life, Simmons find ways to keep her mind attuned to those principles that keep treating people the way you want to be treated foremost in her thoughts and dealings with others. She is very involved in her church, speaks Spanish, is learning Mandarin, and once also spoke Italian very well.

In her spare time, Simmons practices the ancient Chinese martial art Chen Tai Chi Chuan, hikes, cycles, and spends time with her husband and grown son whenever she can get some of his time. She completed her master's degree in aerospace engineering about six years ago, and periodically takes physics or math classes for fun and to keep her mind "alive." Her interests in lineage and ancestry led to her discovery that she's related to the Russian poet, Alexander Pushkin, and although not an ice cream or pastry fan, Simmons' go-to junk food is hard candy, specifically Red Hots® or anything sour.

Simmons hopes that her involvement in "i am goddard" will "bring us back up from a tunnel vision view of diversity and embrace its true meaning." And although she's only one person, she is confident that her actions can make a difference.

"If you throw a pebble into the lake, the water ripples outwards touching everything on the surface. Soon afterwards the water stills, the ripples disappear, and it appears as if the pebble had made no change whatsoever. But, beneath the surface of the water, the pebble has forever changed the lake. The water flows around it, the fish have to swim around it... forever. And in that part of the lake, it makes a difference." ■



NASA and NOAA Team up to Save Teens

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Beginning Oct. 8, Chris O'Connors, Beth Creamer, and others had several exchanges with Mr. Kalolo from Tokelau after the boys had been missing for about a week.

The request for help was an unusual one in that came through a convoluted chain of emails, was from an area of responsibility well outside the U.S. area, and did not involve emergency beacons or satellites in any way.

Nevertheless, Chris and his SARSAT team were true professionals and went the extra mile to get the islanders in touch with the Australian RCC. Well done! Mark"

There were several unsuccessful searches by New Zealand's air force. Samuel Perez, Filo Filo, and Edward Nasau were all presumed dead until a tuna ship near Fiji found them and rescued them on their 50th day at sea.

It's a Thanksgiving story with a happy ending, and a good example of how U.S. agencies are willing to go to different lengths to accomplish a task.

More information about the Search and Rescue Mission Office can be found at: <http://searchandrescue.gsfc.nasa.gov>. ■

OutsideGoddard: Over the Top “Hollydays”

By Elizabeth M. Jarrell

Goddard Web Producer Holly Zell has always loved Halloween and Christmas, so it was natural for her to want to share these “Hollydays” with others. In 1994, Holly created her first “Halloween” display outside her recently purchased house using life size papier-mâché tombstones, which she had to keep moving out of the rain. Says Holly, “What makes my display unique is that I build my own props. Moving into a house allowed me to finally let my creative juices go wild.”

“In 2005, I really got creative with my Halloween vision and made lots of new props,” continues Holly. Her props currently include a spider web, a flying ghost, a cemetery, a mausoleum, a torture chair, gallows, a dungeon mistress, the bridge of death, a skeleton lawn jockey, and numerous carved craft pumpkins. She even offers a photo booth behind the dungeon’s bars. She dresses as a skeleton and becomes part of her display.

She turns her living room into an elaborate funeral parlor and hides the treats in the casket with the body. She makes treat bags that include candy, spider rings, themed erasers, and confetti. “The adults love it. Knowing how scary the display can seem, I make special arrangements for very young visitors,” explains Holly, “I do everything myself. It’s my show. I am ‘Halloween.’”

Says Holly, “Because of all the decorating I do for Halloween, I decorate minimally for Christmas.” Instead, in 2007, Holly initiated her “Tacky Lights” Christmas Web site that lists the over-the-top displays in Fairfax

County, Va. that she recommends. “‘Tacky’ is a term of endearment. To me, these decorations are beautiful, unique, and huge,” says Holly.

Holly allows Web site viewers to vote for their favorite display and rate each house on the following scale: “Classy, Easy on the eyes, Regurgitated Christmas, Seen from space, and Holly Moly!” She takes all the photographs, verifies all the addresses, and offers route suggestions every year with input from viewers. In addition, her Web site includes her “tacky blog” that tells people when each house is fully decorated. Holly admits that she “takes this responsibility very seriously.” Her work begins at Thanksgiving.

One of her favorite displays is created entirely by the homeowner and has computer-run animations similar to those at commercial light shows. Explains Holly, “My favorite decorations include a fox chasing a rabbit from hole to hole; Santa landing on the roof, going down the chimney, coming out of the chimney, and then flying back to the North Pole; and the entire story of the Nativity as told in lights.” The Christmas tree inside the house is surrounded by a miniature animated Christmas village.

According to Holly, “My Christmas Web site got me my job at Goddard.” Her Christmas Web site has been featured in a WETA Christmas special and on the news radio station WTOP. Her Halloween Web site was written up in *The Washington Post*.

“I get so much joy and so many ‘thank yous’ from people. Someone recently told me that they rented a limo and took their family on a Christmas light tour using my route and now it’s a family tradition.” Holly grins and says, “I’m still a big kid. Halloween and Christmas are my passions.”

You can view Holly’s Halloween Web site, complete with scary music, at: <http://www.halloween.net>.

Visit Holly’s Tacky Lights Christmas Web site at: <http://www.fairfaxchristmaslights.com>. ■



Photo credit: NASA-Goddard/Debra McCallum

Caption: Holly Zell at Celebrate Goddard in June 2010.